

# Translating guidelines into practice for the management of atrial fibrillation: results of an European Heart Rhythm Association Survey

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Despite the huge progress made in the both understanding the mechanisms and the management of atrial fibrillation (AF) this arrhythmia still represents an important health and social burden. Atrial fibrillation is increasing in frequency and is a major cause of death, stroke, heart failure, cognitive decline, and hospitalizations. New data have emerged emphasizing the multidisciplinary approach to better management of this common arrhythmia. Despite the availability of AF management guidelines, practice among European centres may differ from the current guideline recommendations. The scope of the current European Heart Rhythm Association (EHRA) survey is to evaluate the extent of the disparities between clinical practice and the 2016 AF European Society of Cardiology (ESC) guidelines. Our survey examined important topics such as screening for AF, initial therapy, rhythm strategy, and stroke and bleeding risk assessment. In general, there was a high adherence to the new ESC AF guidelines among European cardiologists.

## Keywords

Atrial fibrillation • Quality of life • European Society of Cardiology guidelines • Atrial fibrillation screening • Rhythm and rate control strategy • Stroke prevention

## Introduction

Atrial fibrillation (AF) is the most encountered sustained arrhythmia globally, with a significant impact on mortality, morbidity, and quality of life (QoL).<sup>1,2</sup> A change in the AF management paradigm is increasingly evident. First, there is an increasing awareness that AF is frequently unrecognized with the consequent implications for risk management. Second, AF is only a phenotype of a complex syndrome involving multiple mechanisms, aetiologies, and risk factors.<sup>3</sup>

The 2016 European guidelines on AF<sup>4</sup> recommend modern management of AF in an integrated, structured, and multidisciplinary approach. This encompasses a multidisciplinary holistic approach to

integrated care that includes stroke prevention, better symptom, and QoL improvement (rhythm and rate control), and risk factor management to improve life expectancy and reduce complications (e.g. precipitating factors or underlying comorbidities).<sup>5</sup>

Despite clear evidence of overall country or regional improvement in guideline adherence and corresponding outcomes,<sup>6</sup> everyday European clinical practice at the patient level may differ from the European Society of Cardiology (ESC) guideline recommendations. The intention of the present European Heart Rhythm Association (EHRA) survey was to evaluate the extent of the disparities between daily clinical practice and the 2016 AF ESC guidelines concerning the main messages driven by the 2016 document.

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## What's new?

- This survey is an updated snap-shot overview of cardiologists' adherence to the latest European AF guideline.
- The adherence is reasonably high.
- The cardiologists' awareness regarding key messages of the 2016 AF guideline (screening, initial management, rhythm strategy, stroke and bleeding risk prevention and shared decision) confirmed that the guideline recommendations are intended to be followed in daily practice.
- In some areas the adherence is not optimal and warrants improvement, especially where more evidence is required or regarding shared decision making.

## Methods and results

### Participating centres

An on-line questionnaire prepared by members of the Scientific Initiative Committee of the EHRA was sent to 147 members of the EHRA electrophysiology Research Network from 17 countries. There were 68 centres that responded (46% response rate), however, 3 were blank replies and 65 centres were analysed. Of these centres 54 were University hospitals, 6 represented non-University hospitals, and 5 were private centres. Two centres completed only the identification data, and therefore, the final data analysis was conducted on the 63 who provided complete responses to all questions.

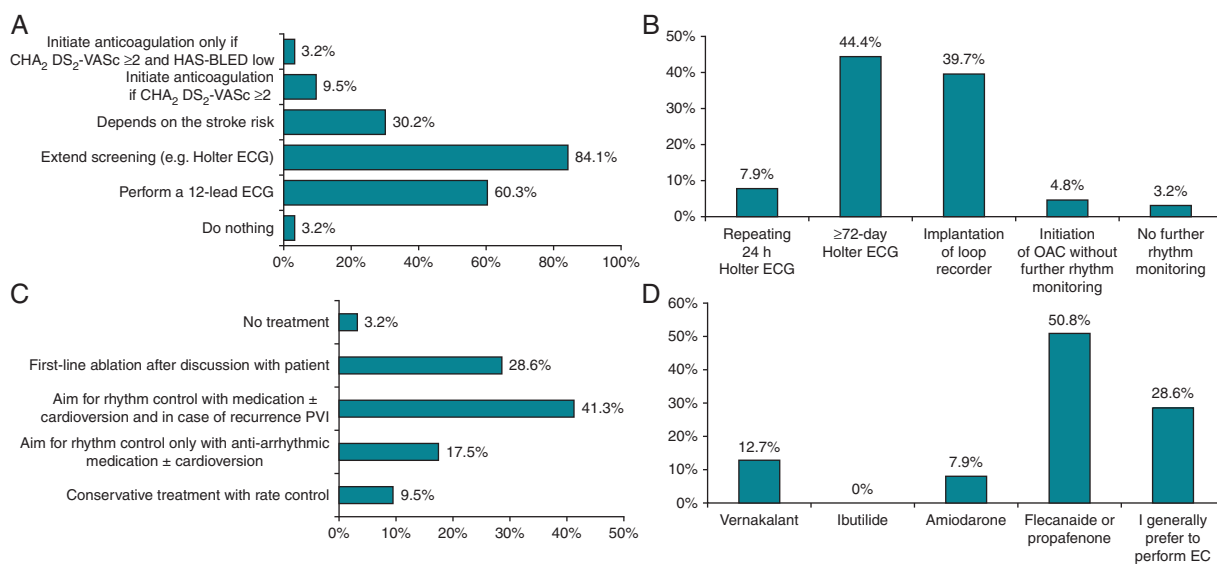
### Screening for atrial fibrillation

When faced with a patient without known AF who reported self-detection/diagnosis of the arrhythmia with a non-validated device (e.g. smartphone, smartwatch, blood pressure device etc.) Eighty-four percent of respondents indicated that they would extend the screening period (e.g. Holter monitoring), while 60.3% indicated they preferred to perform a 12-lead electrocardiogram (ECG). Interestingly, 30.3% indicated that their willingness to further screen for AF would be dependent on the individual stroke risk; for example, 9.5% indicated that they would initiate anticoagulation if the CHA<sub>2</sub>DS<sub>2</sub>-VASc score was  $\geq 2$ , with 3.2% initiating anticoagulation if the CHA<sub>2</sub>DS<sub>2</sub>-VASc score was  $\geq 2$ , and HAS-BLED score was low (Figure 1A).

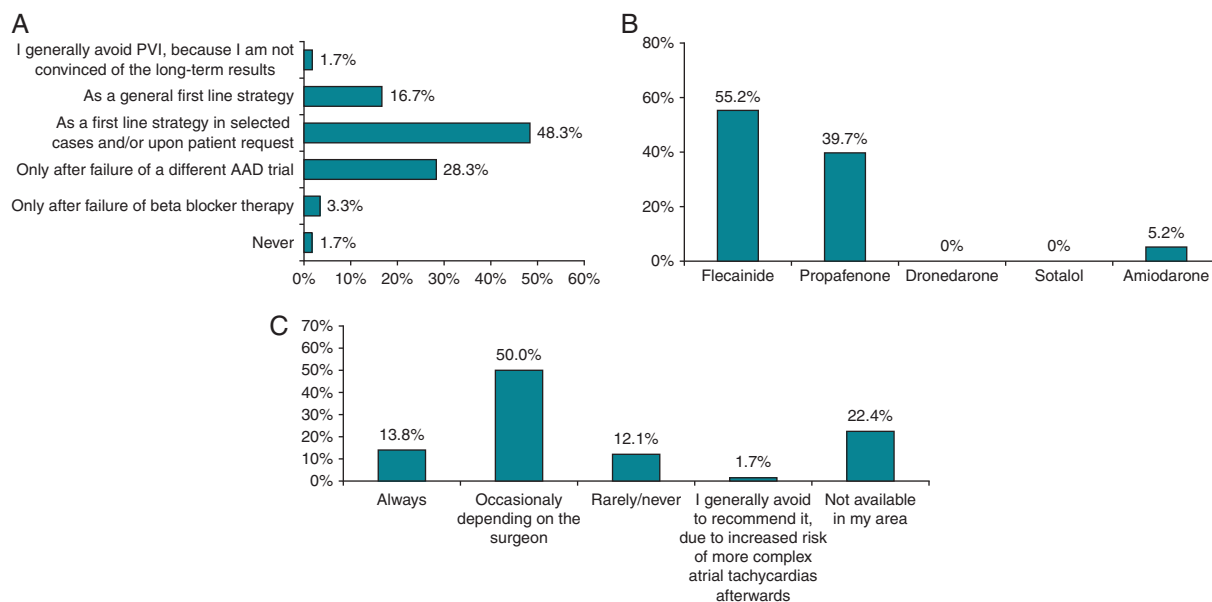
In the case of a patient with no documented AF who suffered a cryptogenic stroke, in whom the initial Holter recording was negative for AF, 44.4% indicated they would undertake  $\geq 72$  h Holter monitoring, and 39.7% would implant a loop recorder. Only 7.9% indicated repeating the 24 h Holter (Figure 1B).

### Initial management strategy and conversion to sinus rhythm

For an incidentally diagnosed mildly symptomatic patient (EHRA 1–2a), age <60 years, with no structural heart disease and well-controlled heart rate AF on ECG, 41.3% would aim for rhythm control with drugs with or without cardioversion, with pulmonary vein isolation (PVI) in the case of recurrence, in addition to oral anticoagulation if needed. Of note, 28.6% selected ablation as first-line therapy (Figure 1C).



**Figure 1** (A) Management options recommended by responders in a patient without known AF, who claims that she/he has self-detected this arrhythmia with a non-validated device (smartwatch, smartphone with ECG electrodes, and blood pressure devices). (B) Options for the next diagnostic/therapeutic step in a patient with no documentation of AF and first time cryptogenic stroke, in whom an initial 24 h Holter ECG did not show any AF. (C) The initial strategy for mildly symptomatic active patients <60 years old (EHRA I–IIa) without structural heart disease and incidentally diagnosed normal heart rate AF on the ECG, in addition to OAC. (D) The preferred conversion strategy for pharmacological in-hospital cardioversion in AF patients without structural heart disease. Numbers indicate percentage of respondents. AF, atrial fibrillation; EC, electrical cardioversion; ECG, electrocardiogram; EHRA, European Heart Rhythm Association; OAC, oral anticoagulant; PVI, pulmonary vein isolation.



**Figure 2** (A) Preferences for PVI in highly symptomatic AF patients <65 years old, without structural heart disease aiming for rhythm control (no answer from three respondents). (B) Preferred first-line drug in AF patients without structural heart disease for whom pharmacological rhythm control strategy is pursued (five respondents did not express their opinion). (C) Preferences for surgical MAZE procedure in patients with known paroxysmal or persistent AF scheduled for heart surgery (five respondents did not express an opinion). Numbers indicate percentage of respondents. AAD, antiarrhythmic drug; AF, atrial fibrillation; PVI, pulmonary vein isolation.

if the patient was in agreement. Only 17.5% preferred a more conservative approach [rhythm control with antiarrhythmic drugs (AADs) with or without cardioversion] (Figure 1C). If in-hospital pharmacological conversion was intended, half (50.8%) would utilize Class Ic drugs (flecainide or propafenone), 12.7% vernakalant and only 7.9% amiodarone, whilst 28.6% preferred electrical cardioversion over drug therapy (Figure 1D).

For a symptomatic patient with rapid AF rate but no haemodynamic deterioration, 30% indicated a preference for initiating a 'pill-in-the pocket' therapy in the hospital, 40% in outpatient setting, and 30% never using the 'pill-in-the pocket' strategy.

## Rhythm control strategy

There was a preference for PVI (48.3% of respondents, as first line therapy or where requested by patient) in a highly symptomatic patient, <65 years old, without structural heart disease, aiming for restoration of sinus rhythm is shown in Figure 2A.

In the case of a patient with AF and no cardiac structural disease, the preferred AADs for rhythm control strategy were flecainide (55.2%) and propafenone (39.7%). Only 5.2% choose amiodarone, dronedarone, and sotalol were not used by any respondent for such a patient (Figure 2B).

Facing a patient with known paroxysmal or persistent AF and scheduled for heart surgery, 13.8% would select a concomitant Maze procedure, half would accept it if the surgeon was in favour, and for 22.4%, a Maze procedure was not available in their area (Figure 2C).

## Stroke and bleeding risk stratification and thromboprophylaxis

When deciding whether or not to anticoagulate an AF patient, 98.3% used the CHA<sub>2</sub>DS<sub>2</sub>-VASc score for stroke risk stratification; the remainder used the older CHADS<sub>2</sub> score.

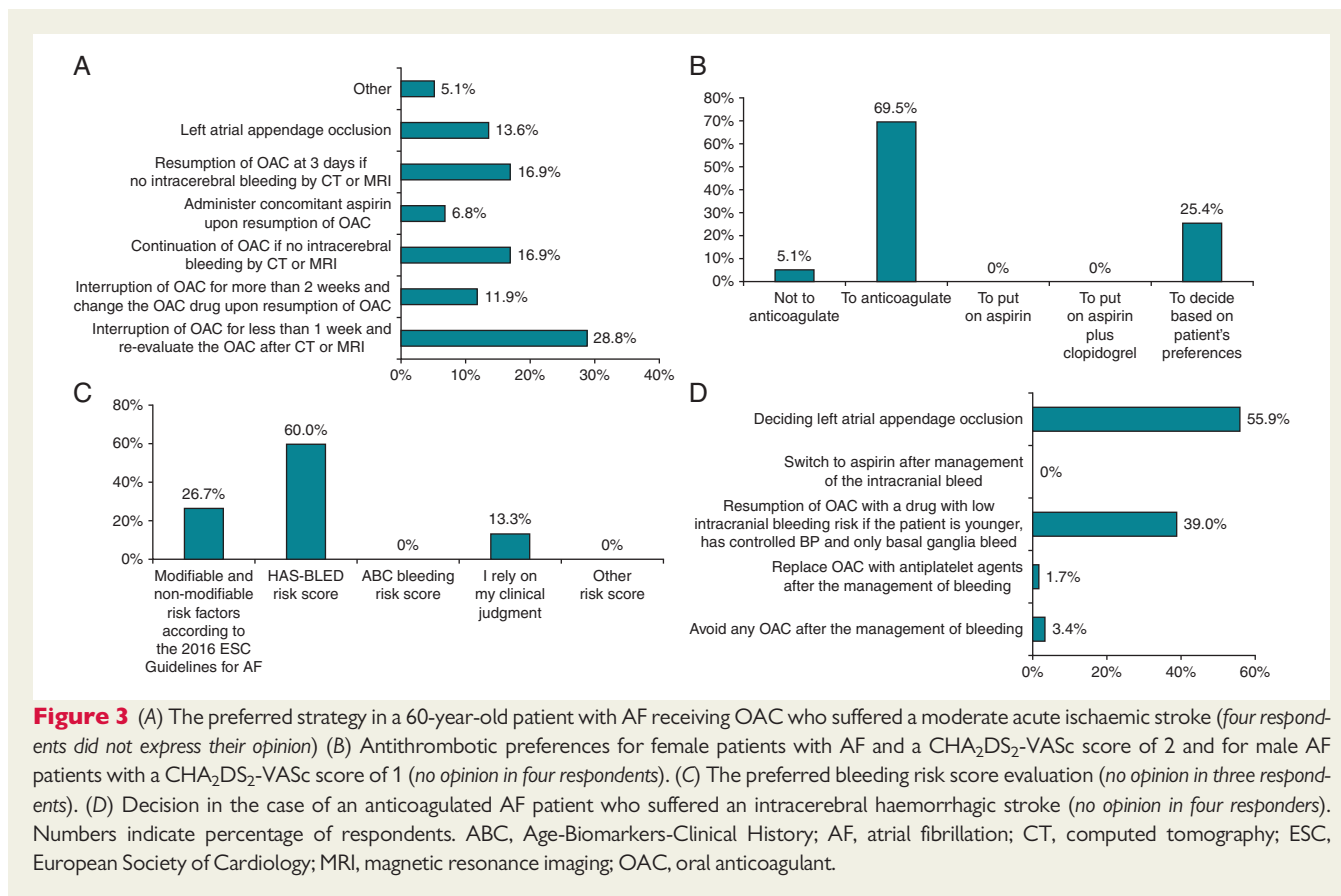
In a 55-year-old patient who had suffered a recent ischaemic cerebral transient attack but with no additional CHA<sub>2</sub>DS<sub>2</sub>-VASc risk factors, almost all respondents (98.3%) would choose a NOAC for thromboprophylaxis.

For a 60 years old clinically stable patient with AF who suffered a moderate acute ischaemic stroke (National Institutes of Health stroke severity scale score 9), 28.8% of respondents indicated that they would interrupt anticoagulation for <1 week and re-evaluate anticoagulation use after computed tomography or magnetic resonance imaging examination, whereas 13.6% favoured left atrial appendage occlusion. Other options are shown in Figure 3A.

In the case of a female AF patient with CHA<sub>2</sub>DS<sub>2</sub>-VASc score of 2 or a man with CHA<sub>2</sub>DS<sub>2</sub>-VASc score of 1, 69.5% of respondents would initiate anticoagulation and in one-quarter, their decision to anticoagulated would be based on the patient's preference (Figure 3B).

When assessing bleeding risk in an AF patient treated with anticoagulation, 60% indicated they used the HAS-BLED risk score, while 26.8% used the 2016 ESC guidelines table on bleeding risk factors (Figure 3C). Interestingly, 13.3% used 'clinical judgement' and none used the Age-Biomarkers-Clinical History (ABC) bleeding risk score.

In a difficult clinical scenario of an anticoagulated AF patient who suffered a moderate to severe intracranial bleeding, left atrial appendage



**Figure 3** (A) The preferred strategy in a 60-year-old patient with AF receiving OAC who suffered a moderate acute ischaemic stroke (four respondents did not express their opinion) (B) Antithrombotic preferences for female patients with AF and a CHA<sub>2</sub>DS<sub>2</sub>-VASc score of 2 and for male AF patients with a CHA<sub>2</sub>DS<sub>2</sub>-VASc score of 1 (no opinion in four respondents). (C) The preferred bleeding risk score evaluation (no opinion in three respondents). (D) Decision in the case of an anticoagulated AF patient who suffered an intracerebral haemorrhagic stroke (no opinion in four respondents). Numbers indicate percentage of respondents. ABC, Age-Biomarkers-Clinical History; AF, atrial fibrillation; CT, computed tomography; ESC, European Society of Cardiology; MRI, magnetic resonance imaging; OAC, oral anticoagulant.

occlusion was the preferred management strategy amongst 55.9% of respondents. For 39.0%, resumption of an anticoagulant therapy with a low risk of ICH was preferred if the patient was younger, adequately controlled blood pressure and had only basal ganglia bleed (Figure 3D).

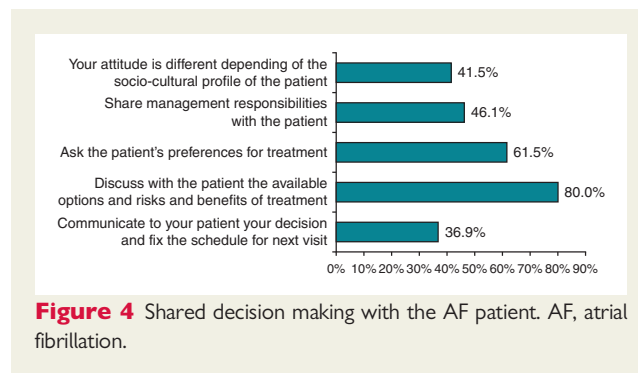
## Shared decision-making

When deciding the management strategy for their AF patients (a question where multiple answers were permitted), 80% of respondents indicated that they would discuss the available options, risks and benefits with the patient, 61.5% would ask the patient about his/her preferences, while 39.9% would communicate their medical decision and arrange the follow-up schedule with the patient (Figure 4).

## Discussion

This EHRA survey provides an updated snap-shot overview of cardiologists' adherence to the latest European AF guidelines.<sup>4</sup> Although limited by a relatively low number of selected centres and the limited response rate, this survey is able to demonstrate a growing awareness of the key messages of the ESC guideline for AF and generally increased adherence to them. The main topics interrogated were (i) screening for AF, (ii) initial management and cardioversion strategy, (iii) rhythm preservation strategy (iv) stroke prevention and bleeding risk, and (v) shared decision-making with the patient.

The 2016 European guidelines recommend opportunistic screening for AF in older patients and in patients with increasing risk (and



**Figure 4** Shared decision making with the AF patient. AF, atrial fibrillation.

risk factors) for AF (Class I indication). In recent EHRA consensus documents, the utility of opportunistic screening in high-risk patient was also emphasized.<sup>7-9</sup> In our survey, more than 84% of the respondents would extend screening for AF after a first 'signal' suggested by a non-validated device and two-thirds would at least perform a 12-lead ECG; these are in accordance with ESC guidelines. However, 10% would initiate anticoagulation if the CHA<sub>2</sub>DS<sub>2</sub>-VASc score >2. This strategy is not evidence based, but the current guideline accepts anticoagulation use in selected patients depending on their risk profile and preferences, for example, if atrial high rate episodes are detected by implanted devices. Screening for AF is of particular importance for patients who have suffered an ischaemic cryptogenic stroke.<sup>10,11</sup> Indeed, outpatient telemetry for up to

30 days in such patients has resulted in an AF detection rate of 12–23%.<sup>1</sup> The 2016 European Guideline recommends prolonged ECG monitoring (at least continuous 72 hours—class I indication) in all survivors of an ischaemic stroke without an established diagnosis of AF. This assumption is based on low diagnosis yield of short repetitive ECGs or one 24 h-Holter monitor in patients with paroxysmal AF. In our survey, 44% of respondents indicated they would undertake 72 h Holter monitoring in a patient with cryptogenic stroke in whom the AF was not previously diagnosed. Another 40% indicated their preference for internal loop recorder (ILR), which is ideal as it covers 100% of long-term rhythm. The lower than expected utilization of ILR may be explained by limited availability and reimbursement of these devices depending on geographical region.

The rhythm vs. rate control strategy discussion for the first seen, non- or low-symptomatic patient, with acceptable heart rate and without structural heart disease could be challenging. All these alternatives given by our survey respondents are in accordance with guideline recommendations and also likely to be related with local facilities and awareness of the role of the interventional electrophysiologist. The guidelines give consideration to AF ablation (PVI) as a first line strategy for symptomatic control in this kind of patient (Class IIaB of indication), although for more than 76% of responders this strategy is acceptable in selected patients or after an AAD trial. When asked about the preferred long-term rhythm management strategy in a patient without structural heart disease, most respondents chose flecainide and propafenone and only 5.2% picked amiodarone, which is considered by the guideline only a second line alternative. Despite a Class I indication in the ESC guidelines, neither dronedarone nor sotalol were selected as treatments. This could represent the effect of the real-world considerations of the risk-benefit balance of using AAD. In the case of a patient undergoing heart surgery, the European guideline indicates AF surgery (Maze) as an acceptable alternative for controlling symptoms (Class IIa indication); however, in our survey 36% of respondents would never indicate this procedure, partly because of lack of availability of expertise in some areas.

In our survey 51% indicated flecainide and propafenone as the first choice for cardioversion in the hospitalized patient without structural heart disease (corresponding to their Class IA guideline indication) and only 29% expressed their preference for electrical cardioversion. The availability and the cost could explain why vernakalant was a preferred drug in only 13%. A 'pill in the pocket' strategy is an acceptable approach for patients with infrequent AF episodes and flecainide or propafenone is indicated by the guidelines for this purpose. Nevertheless, the individual safety of this strategy should be evaluated in the hospital settings.<sup>4,12</sup> This survey demonstrated that only 30% of cardiologists initiate this strategy in hospital settings, while 40% initiate in outpatient settings and 30% never use this strategy.

Stroke prevention in AF patients is the most important goals of AF management.<sup>13,14</sup> The most commonly used (and guideline-recommended) risk stratification scheme is the nine point CHA<sub>2</sub>DS<sub>2</sub>-VASc score; indeed, almost all (98%) respondents of this survey used this. In secondary, stroke prevention the NOAC are preferred over vitamin K antagonists therapy with a Class IB of evidence recommendation given their superior efficacy and safety profile, notwithstanding reported regional differences in their uptake.<sup>15</sup> An important practical issue concerning the secondary stroke prevention is the timing for the reinitiation of the anticoagulant therapy. Because of the risk of

haemorrhagic transformation, the guideline recommends a 3–12 days interruption of anticoagulation and resumption after this interval based on a multidisciplinary and the patient's characteristics. However, the answers to the survey were heterogeneous; 41% indicated a reasonable timing of 1–2 weeks until the resumption of anticoagulation but, surprisingly, some indicated concomitant use of aspirin or change in anticoagulant drug after resumption, despite lack of evidence for both these strategies. Interestingly, 14% indicated left atrial appendage closure as strategy, but this strategy does not preclude anticoagulant therapy.

For the patients with low CHA<sub>2</sub>DS<sub>2</sub>-VASc score (women with score of 2 or men with score of 1), the 2016 ESC guidelines state that the decision regarding oral anticoagulant should be depending on patient characteristics and preferences. However, there is accumulating evidence that these patients are at increased risk for stroke and the net clinical benefit would be to offer stroke prevention<sup>16,17</sup>; indeed, 70% of the survey respondents indicated their preference for anticoagulation in such patients.

With clinical management, the patient's bleeding risk should be evaluated before the anticoagulant therapy is initiated, and modifiable bleeding risk factors addressed at all patient reviews.<sup>18</sup> A complex table bleeding risk factors is recommended by the ESC guideline in order to evaluate bleeding risk; however, a more simple and validated bleeding risk score allows the clinician to 'flag up' patients at high bleeding risk for more frequent reviews and follow-up. A simple bleeding risk score that does this is the HAS-BLED score, which also draws attention to the modifiable bleeding risk factors; indeed, the HAS-BLED score has been shown to be a superior strategy for bleeding risk evaluation compared with an approach solely based on modifiable bleeding risk factors alone.<sup>19–21</sup> Indeed, two-thirds of the survey responders use the HAS-BLED score to assess bleeding risk.

A difficult clinical decision, remaining under debate, is what is the most appropriate stroke prevention strategy for an AF patient who has suffered an intracerebral haemorrhage. The 2016 ESC AF guidelines emphasize on the mandatory multidisciplinary approach and a nuanced attitude. In a patient with a lower risk of bleeding the guideline advises the resumption of anticoagulation after 4–8 weeks (class of evidence IIbB). The alternative strategy is left atrial appendage closure or no anticoagulation; hence 56% of the survey respondents indicated appendage closure as their preferred strategy in a patient with indices of low bleeding risk and 39% agree with the resumption of anticoagulation.

As expected and as indicated by the guidelines, almost all respondents were aware that success of management depends on shared decision making, but more than one-third would be paternalistic and make the decision and simply communicate 'the doctor's decision' to the patient.

## Conclusion

This survey suggests, such as recent European registries,<sup>22</sup> that the adherence to the most recent ESC AF guidelines is reasonably high. However, it is not optimal in some areas and warrants improvement especially where more evidence is required (e.g. AF and intracerebral haemorrhage) or with regard to shared decision-making. For the five main messages of the ESC guideline for AF (screening, initial



management, rhythm strategy, stroke and bleeding risk prevention, and shared decision) the survey participants have shown a high degree of general awareness and confirmed that in their daily practice, they do try to follow guideline recommendations and strategies.

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